**Purpose of Study**

Acquired immunodeficiency syndrome (AIDS) is the end state of an infectious disease caused by the human immunodeficiency virus (HIV). HIV/AIDS is one of the leading causes of death in persons aged 25 through 44 years (Michigan Department of Community Health, 1998). While there is not yet a cure for AIDS, early medical intervention can delay the onset of symptoms and progression of the disease.

**Study Population**

The population for the HIV/AIDS care study included all enrollees with an HIV diagnosis with 12 months continuous enrollment in 1999. In addition, enrollees were identified by the presence of CD-4 testing or HIV related prescriptions. For medical record abstraction, enrollees encountered at least one office visit with a primary care physician or infectious disease specialist. The population encompassed enrollees of all ages across all 19 Qualified Health Plans (QHPs) participating in the EQR 1999 review. The entire population of 521 enrollees was selected for the study. The study reviewed services provided during the 1999 calendar year.

The data from the review of the medical records were analyzed at the aggregate level due to the small size of the population. This small population would not provide adequate numbers for plan to plan comparisons.

**Study Questions**

Study questions for this focus area were developed in cooperation with the Michigan Department of Community Health using standards developed by the U.S. Department of Health and Human Services. The questions developed for this focus study are listed below:

- Does clinical management of HIV infected enrollees include CD-4 and viral load testing?
- Does the clinical management of HIV infected enrollees include visit(s) to an infectious disease specialist, PCP prophylaxis, combination antiretroviral therapy, and medication monitoring and follow-up?
- What is the proportion of enrollees with service use that does not include ambulatory (office) visits with a primary or specialty provider?

**Limitations**

Persons living with HIV/AIDS often require the care of infectious disease specialists. In the current study, provisions were made to obtain all medical records including those records from infectious disease specialists. Although records of infectious disease care and treatment were requested for the EQR 1998 study, the records were not consistently available for review.

The current study also included all ages of enrollees for the HIV/AIDS focus study. The EQR 1998 study included only those enrollees aged seven years and older. This may affect the comparability of the findings from the current review to EQR 1998.

## Results

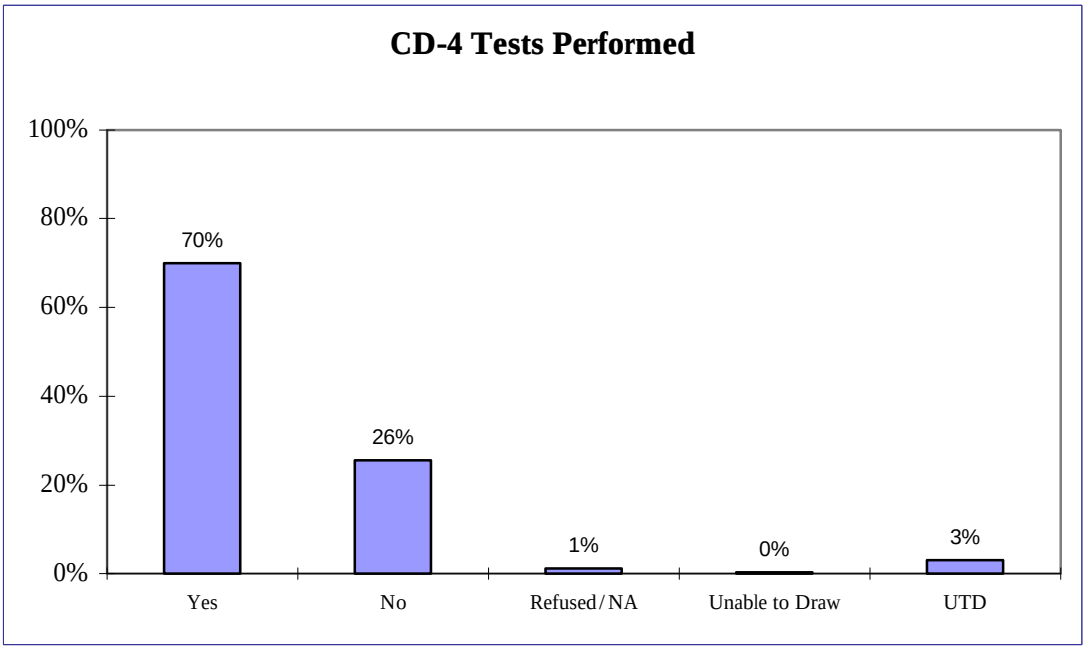
### CD-4 Testing

➪ **70% of the enrollees with HIV/AIDS received CD-4 testing during the review period**

Assessment is a key element in the initial evaluation for an individual diagnosed with HIV/AIDS. Measuring the number of CD-4 cells is one of the primary tests for monitoring immune function (El-Sadar, et. al., 1994). A CD-4 test is a laboratory study used to quantify the presence of white blood cells with the CD-4 surface marker in a specific volume of blood. CD-4 cells, also known as T-Cells or T-Helper Cells, are essential components of the human defense mechanism against infectious diseases. Results of CD-4 tests are used to plan appropriate treatment measures and medical interventions.

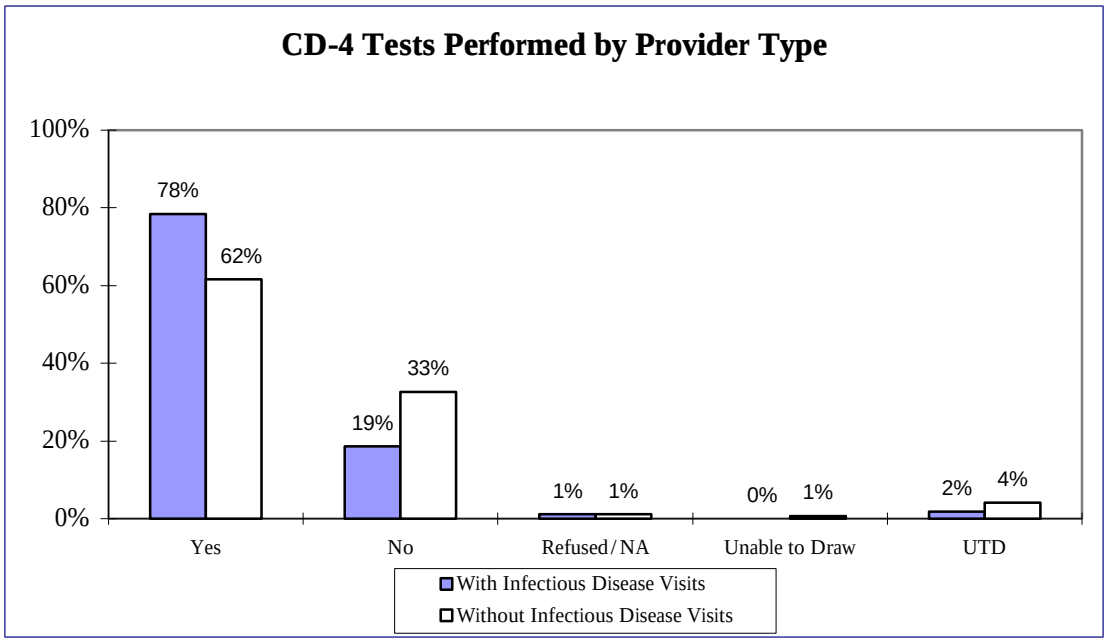
As depicted in Figure 6.1, 70% of HIV infected enrollees received at least one CD-4 test during the study period. Of all records reviewed, 26% included no CD-4 test documentation. Nurse reviewers entered the response "patient refused/not available" when documentation indicated an enrollee's lack of consent for an ordered test or if laboratory testing was not available. This category was noted in 1% of records reviewed. The response "unable to draw" was used when documentation indicated a test was ordered but a blood specimen was unattainable. This occurred in less than one percent of tests ordered. Findings for EQR 1998 indicated that 50% of medical records included documentation of a CD-4 test. This shows an increase in the 1999 EQR rates.

**Figure 6.1**



Further analysis shown in Figure 6.2 identified that 78% of the enrollees who had an office visit with an infectious disease specialist received a CD-4 test while 62% of the enrollees without an infectious disease visit received a CD-4 test. The data suggests that the enrollees receiving care from infectious disease specialists were more likely to receive CD-4 testing.

**Figure 6.2**



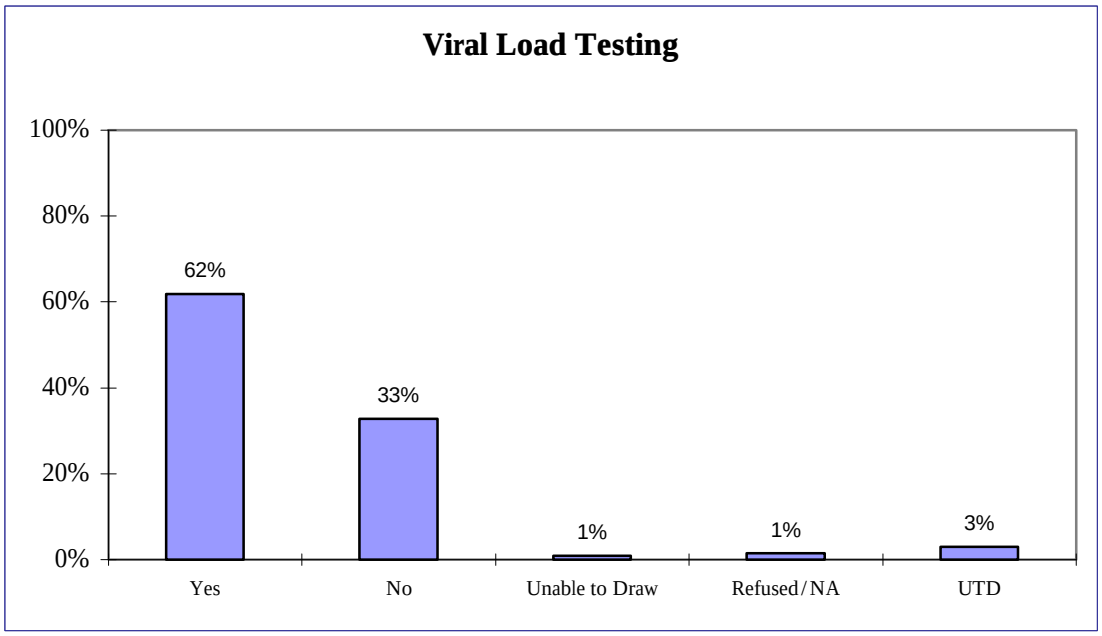

## Viral Load Testing

### ➪ 62% of the enrollees received viral load testing at least once during 1999

As an individual's CD-4 cell count decreases, there can be a systemic corresponding increase in the mutation and multiplication of the HIV virus. Another laboratory blood study, an HIV-RNA or viral load test, quantifies the presence of HIV virus and is used as a measure of disease progression and to evaluate the effectiveness of medical interventions. The International AIDS Society notes that "pre-treatment plasma HIV-RNA levels and CD-4 cell counts are important for the evaluation of response to treatment" (www.the body.com, accessed November 1999). This study reviewed medical record documentation of viral load testing.

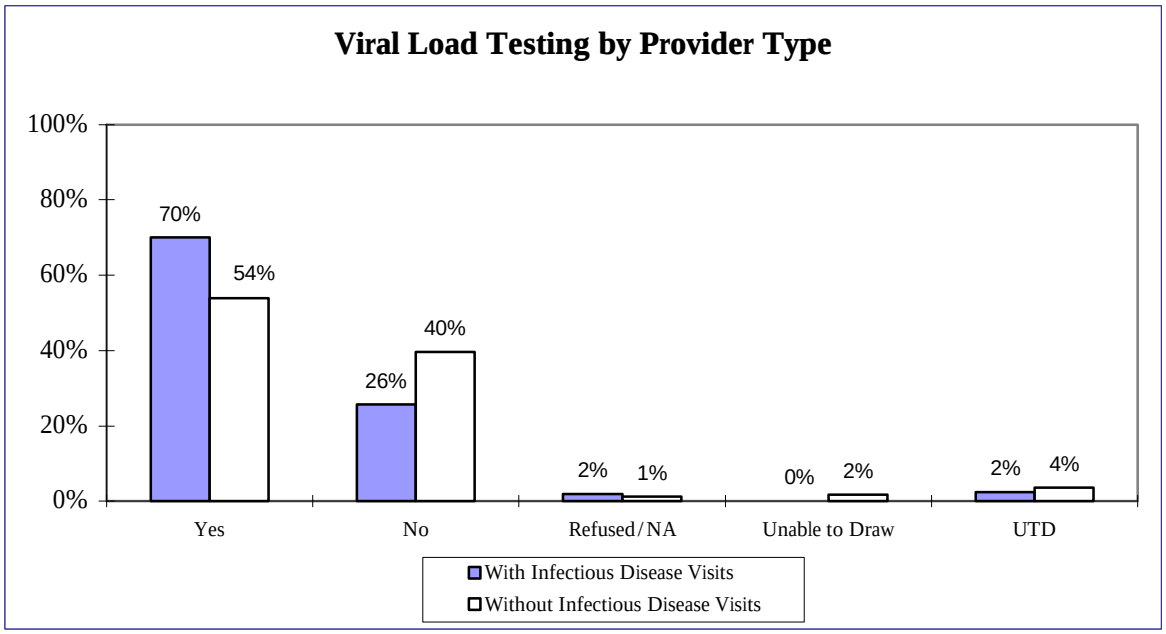
Results of this evaluation are presented in Figure 6.3. For the enrollees with an HIV diagnosis, 62% received viral load testing during the study period. Abstractors noted all tests documented in the medical record as ordered by the health care provider including those results recorded as "patient refused/not available" or "unable to draw". Results were recorded as "patient refused/not available" if an enrollee elected not to have the test completed, or if laboratory testing was not available. Findings for EQR 1998 indicated that 48% of the records reviewed included results of at least one viral load test. These results demonstrate an increase in viral load testing for EQR 1999.

**Figure 6.3**



Further analysis was also performed to determine whether the rate for viral load testing was greater in the group of enrollees who were seen by an infectious disease specialist. The results for this analysis are presented in Figure 6.4. A significant difference between the two groups was identified. Enrollees whose medical care included infectious disease specialist visits received viral load testing in 70% of the cases, while only 54% of the enrollees who did not have an office visit with an infectious disease specialist received viral load testing.

**Figure 6.4**

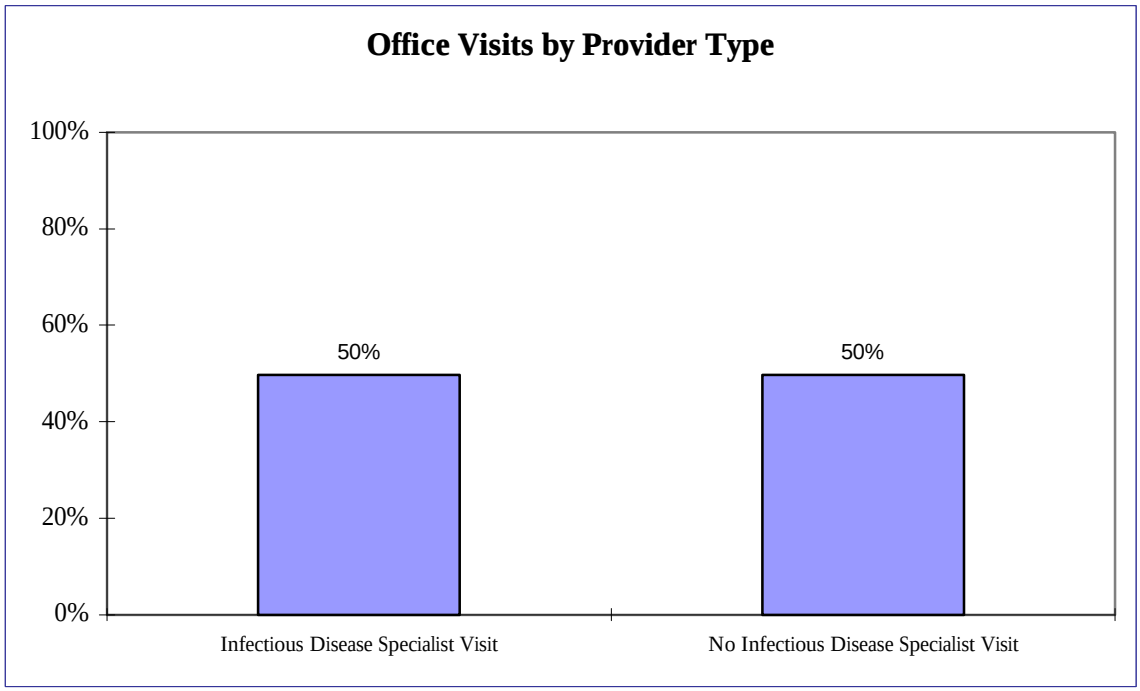


**Visits with an Infectious Disease Specialist**

- **50% of the enrollees in the study presented for at least one office visit with an infectious disease specialist during the study period**
- **55% of the enrollees with a CD-4 count 0-500 presented for at least one office visit with an infectious disease specialist during the study period**
- **60% of the enrollees with a CD-4 count > 500 presented for at least one office visit with an infectious disease specialist during the study period**

Data were abstracted from medical records and supplemented with administrative data for this study question. This data included information on the medical provider's specialty area. HIV care was delivered by an infectious disease specialist in 50% of the enrollee records reviewed as displayed in Figure 6.5. There were no comparable data available from previous EQR studies.

**Figure 6.5**



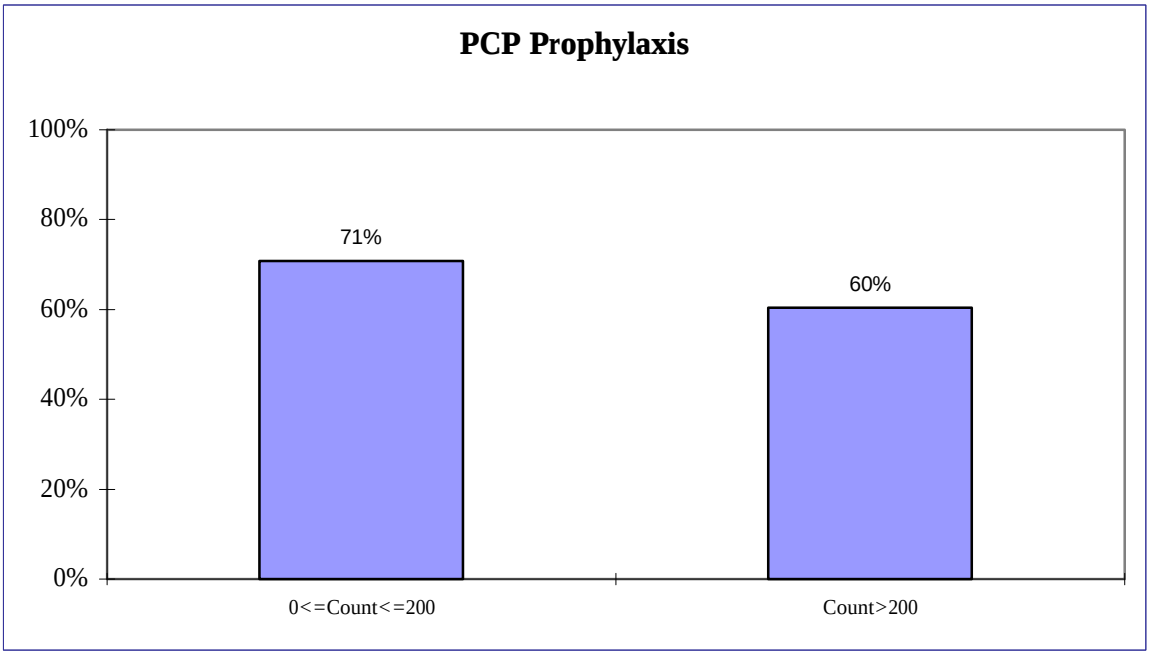

The enrollees were also divided into two groups based on the result of their CD-4 count. The two groups were those enrollees with a CD-4 count 0-500 and those enrollees with a CD-4 count > 500. The results showed that 55% of the enrollees with a CD-4 count 0-500 presented for an office visit with an infectious disease specialist, while 60% of the enrollees with a CD-4 count > 500 received at least one office visit with an infectious disease specialist. Those enrollees with CD-4 counts > 500 demonstrated a rate that was five percentage points higher than those enrollees with a CD-4 count 0-500.

➪ **71% of the enrollees with a CD-4 count 0-200 received PCP prophylaxis during the study period**

The compromised immune system of individuals living with AIDS makes them particularly susceptible to infections caused by opportunistic organisms. Pneumocystis carinii pneumonia (PCP), an opportunistic infection, is the most common serious illness among individuals living with AIDS. For people living with AIDS who have CD-4 counts less than 200 cells/$mm^3$, treatment guidelines recommend prophylactic medications to reduce the probability of contracting the disease. Without treatment, over 80% of people with HIV would eventually develop PCP (www.projinf.org, accessed Nov 1999).

The study population for PCP prophylaxis included those enrollees with a CD-4 count less than 200 cells/$mm^3$. Seventy-one percent of those enrollees with the highest susceptibility (CD-4 count 0-200 cells/$mm^3$) received antibiotic therapy as a means of preventing PCP infection. Some studies and guidelines suggest that it may be appropriate to remove those individuals with a history of PCP from prophylactic treatment when the CD-4 count rises above 200, while others contend that those with a history of PCP are at a higher risk and should continue therapy. EQR 1998 results included those enrollees with a history of PCP, but in EQR 1999 the enrollees with a CD-4 count > 200 and a history of PCP were not included in the calculation. This difference in study population prevents direct comparison. For informational purposes, the rate for those enrollees with a CD-4 count > 200 with a history of PCP are presented along with the result for the 0-200 group in Figure 6.6. Sixty percent of the enrollees with a CD-4 count > 200 and a history of PCP received prophylactic treatment during the study period.

**Figure 6.6**



The population with CD 4 counts 0-
those enrollees with at least one visit to an infectious disease specialist, and those without a

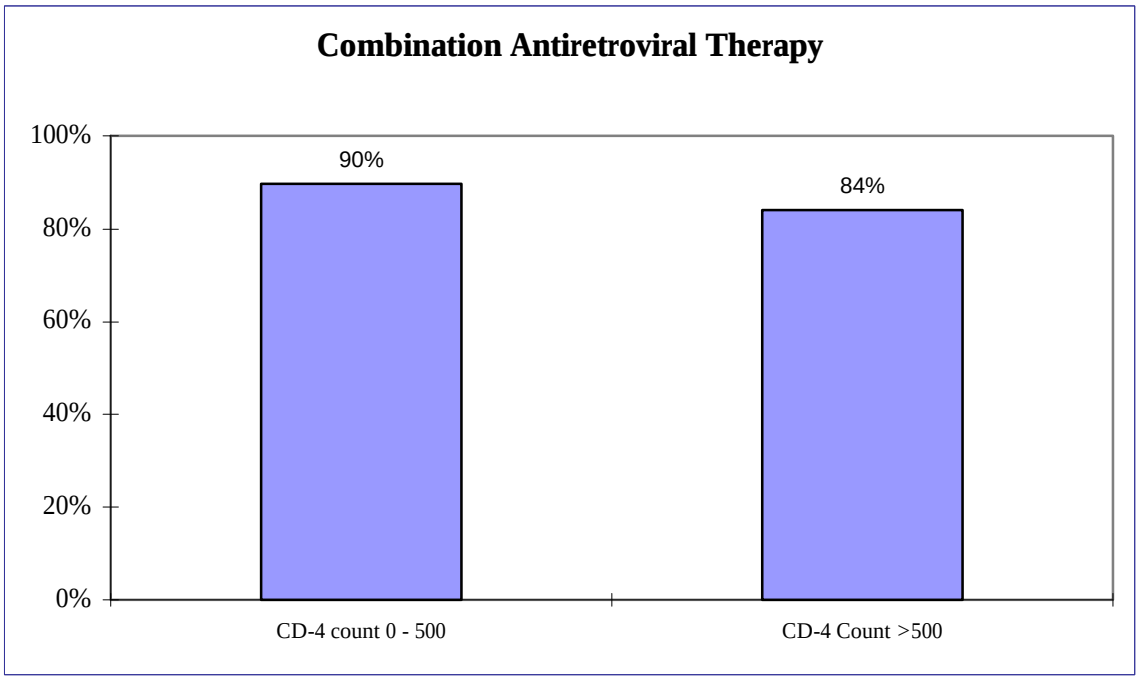
received care from an infectious disease specialist were being treated for prevention of PCP.
Of those enro
receiving PCP prophylaxis.

## Combination Antiretroviral Therapy

➪ **90% of enrollees with a CD-4 count 0-500 received treatment that included at least two antiretroviral medications**

Various combinations of antiretroviral therapy are indicated depending on the stage and progression of an enrollee's HIV/AIDS disease. "Combination medication therapy, consisting of two or more agents, has been shown to suppress viral replication substantially for long periods of time and to hinder the tendency toward resistant strains of the virus" (www.ama-assn.org, accessed November 1999). One of the indications for the initiation of combination antiretroviral therapy in the asymptomatic patient with HIV is a CD-4 count less than 500 (DHHS/Kaiser Family Foundation, 2000). Documentation of combination antiretroviral therapy, including at least two antiretroviral medications, was noted in 90% of medical records reviewed where the CD-4 count was 0-500. The results from EQR 1998 indicated that 84% of the enrollees with a CD-4 count 0-500 or a viral load > 500 received combination antiretroviral therapy. These results are displayed in Figure 6.7. Overall, 77% of the total HIV/AIDS population in the study received combination antiretroviral therapy during the study period, regardless of CD-4 count.

**Figure 6.7**




The group with CD-4 counts 0-500 was divided into two groups for further analysis: those enrollees with at least one visit to an infectious disease specialist and those without an office visit to an infectious disease specialist. The results showed that 91% of the enrollees with visits to an infectious disease specialist received combination antiretroviral therapy. Of those

ectious disease office visits, 88% received combination antiretroviral therapy.

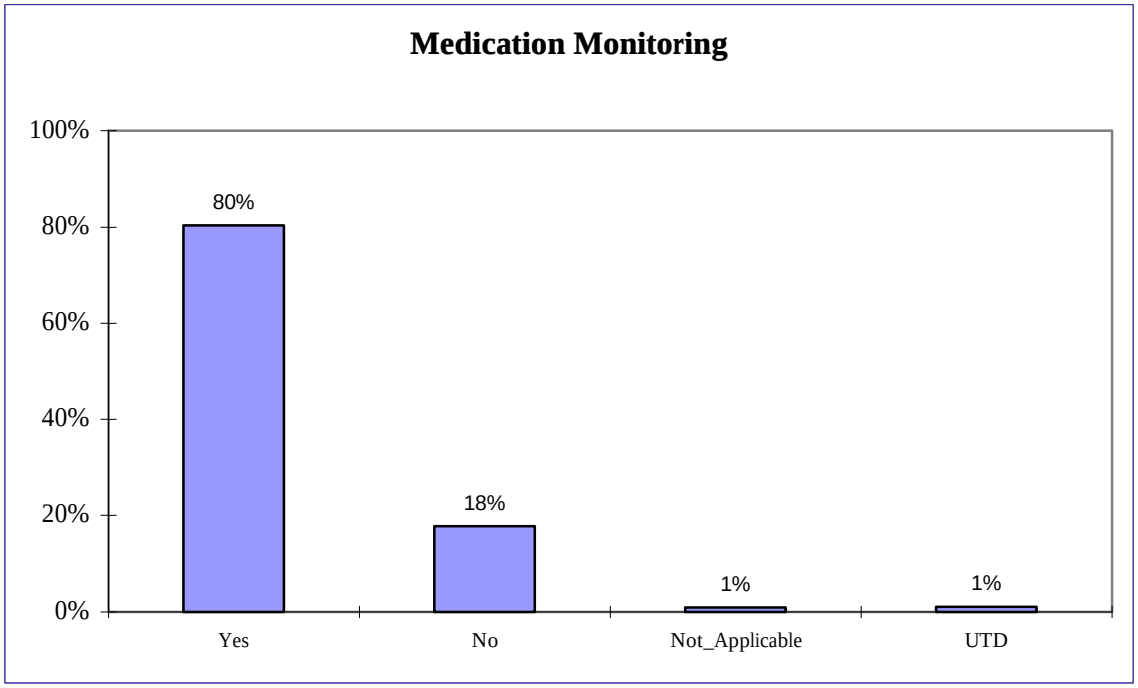
## Medication Monitoring

➪ **80% of the medical records reviewed contained documentation of monitoring of the enrollees medication regimen**

Patient evaluation should include an assessment of the enrollee's adherence to the medication regimen and education regarding the consequences of not adhering to the medication regimen. Adherence to a prescribed medication regimen is particularly important for people living with HIV/AIDS since the potential for organism resistance is increased by inconsistent consumption of medications.

Documents including progress notes, medication flow sheets, medication lists, and prescription refill records were reviewed for evidence that the health care provider monitored the enrollee's medication regimen. Figure 6.8 demonstrates medication monitoring in 80% of medical records of those enrollees meeting criteria for evaluation. The EQR 1998 study reported that medication adherence was evaluated and documented in 76% of records reviewed for enrollees with prescribed medications.

**Figure 6.8**




The results were further analyzed to determine the rates for enrollees with infectious disease specialist office visits and those without a visit to an infectious disease specialist. The results showed that 85% of enrollees who received care from an infectious disease specialist received medication monitoring. Those enrollees who did not have an office visit from an infectious disease specialist achieved a rate of 77% for this indicator.

## Tuberculosis Testing

➪ **12% of those enrollees diagnosed with HIV after January 1, 1999 received tuberculosis testing**

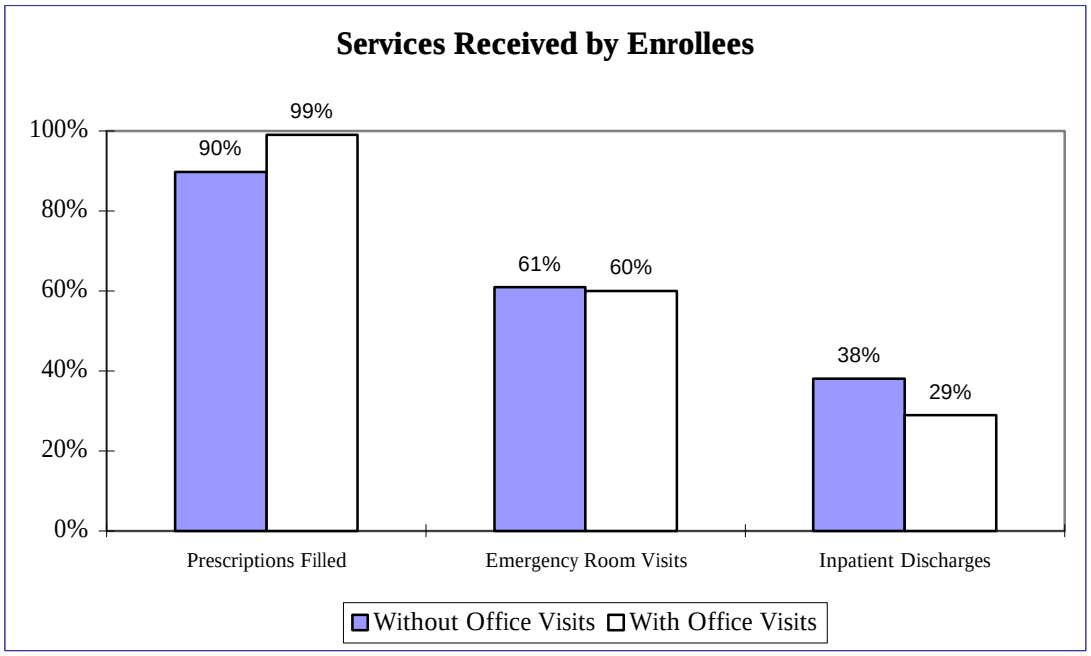
All medical records were reviewed to determine the date of initial diagnosis with HIV. When an enrollee was diagnosed with HIV after January 1, 1999, the medical record was reviewed for evidence of tuberculosis testing. Caution should be used when interpreting these results due to the few enrollees (33) who were newly diagnosed with HIV.

The most common initial diagnostic test to detect tuberculosis infections is a tuberculin skin test or PPD. When a skin test is administered, it requires evaluation or reading within 48 to 72 hours by a trained clinician. Additional diagnostic testing, including a chest X-ray or CT scan may be warranted to identify persons with an active TB infection. Individuals with a history of TB or a positive reaction to the test serum without confirmation of TB are not routinely tested. Results indicated that 12% of enrollees initially diagnosed with HIV during the study period received a TB skin test.

## Other Services

Administrative data were reviewed to determine whether enrollees who did not present for an office visit with their health care provider used other health care services. Figure 6.9 presents rates for other health care services including prescriptions dispensed, emergency room visits and inpatient hospitalization for enrollees.

**Figure 6.9**




As expected, prescription rates were higher for those enrollees with office visits; although, 90% of those enrollees without office visits still filled a prescription during 1999. Emergency room visit rates were similar between the two groups. The enrollees with office visits demonstrated an inpatient discharge rate nine percentage points lower than the rate for enrollees without office visits during 1999.

**Discussion**

Results from the study identified improvements in CD-4 and viral load testing for EQR 1999, as shown in Table 6.1. Rates for PCP prophylaxis and combination antiretroviral therapy are also shown in Table 6.1, along with the rates from the EQR 1998 study.

**Table 6.1**

| Indicator | 1998 | 1999 |
|---|---|---|
| CD-4 Testing | 50% | 70% |
| Viral Load Testing | 48% | 62% |
| PCP Prophylaxis | 69% | 71% |
| Combination Antiretroviral Therapy | 84% | 90% |

Fifty percent of the enrollees who received CD-4 testing presented for at least one office visit with an infectious disease specialist. The results of the study show that the enrollees who received care from an infectious disease specialist demonstrated higher rates for most of the indicators. When the enrollees were stratified by CD-4 count results, the results indicated that those with a CD-4 count > 500 were more likely to receive care from an infectious disease specialist. The enrollees with a CD-4 count 0-500 presented for an office visit with an infectious disease specialist in 55% of the cases, while the rate was 60% for those enrollees with a CD-4 count > 500.

According to the results of the analysis of service use, those enrollees with office visits were more likely to have prescriptions filled, and less likely to be admitted to the hospital. The focus on primary care, while it did not affect the emergency room visit rate, may have impacted the rate of inpatient discharges.

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